

Detection Limits in the Central Analytical Laboratory's NADP Networks

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The Central Analytical Laboratory (CAL) located in Champaign, Illinois on the campus of the University of Illinois has analyzed wet deposition samples for the National Atmospheric Deposition Program (NADP) since 1978. NADP is composed of five monitoring networks. The CAL analyzes samples for three of the networks: the Atmospheric Integrated Research Monitoring Network (AIRMoN), the National Trends Network (NTN) and the Ammonia Monitoring Network (AMoN).

Each year, the CAL publishes a Minimum Detection Limit (MDL) for each analyte that it measures. An MDL is defined as the minimum concentration that can be reported as a quantitated valueⁱ. By contrast a Practical Quantitation Limit (PQL) is the lowest concentration that can be reliably measured. Providing both an MDL and PQL to data users will give them a more complete perspective of NADP data.

MDL's are calculated from results obtained for Quality Assurance (QA) samples submitted monthly as blind samples to analysts. The concentrations for all analytes are approximately 1-5 times the estimated MDL. In the past ten years, new instrument technologies available to the CAL have enabled them to improve their methods and thus lower MDL's for analytes. The lower MDLs increase the need to evaluate data throughout the entire process. The CAL is currently evaluating its QA/QC data to determine PQL values for each analyte and each network.

ⁱ EPA CFR 136 Appendix B